

For Interagency Discussion Only
2020 Border Project Ideas for U.S. EPA Grant 105 Funding

Title	Proposal	Cost (Min-Max)
Train SPA (Baja) and City of Mexicali on air monitoring station calibration (MLD)	CARB will be training Imperial County staff to perform air monitoring station gaseous analyzer calibrations in 2020. Baja SPA and the City of Mexicali will be included in the training. This is recommended due to the results of the audit of the SPA air monitoring network in 2018 that was performed by INECC with CARB support. Several analyzers failed the performance audit where it was found that proper and timely calibrations would have assisted in better audit results. Funding would be used for CARB staff travel and time.	\$5,000
Support SPA with standards certification (MLD)	Baja SPA standard certification has been supported for many years as part of the MOC between CalEPA, USEPA, SEMARNAT and SPA. The MOC includes a clause for CARB to support SPA with calibration of their flow and ozone standards. Funding would be for staff time and shipping of equipment.	\$5,000
Continue to participate in AQTF meetings (MLD/AQPSD)	In support of Border 2020, CARB staff regularly participates in the Imperial-Mexico Air Quality Task Force meeting and the Imperial County-Mexicali Air Quality Working Group. The funds would be for multiple staff time and travel to these quarterly meetings in Imperial/Mexicali and in San Diego.	\$5,000
Purple Air sensor replacements for the City of Mexicali (MLD/AQPSD)	The California Air Resources Board and the City of Mexicali partnered on a project beginning in December of 2018 to increase the number of low-cost sensors in the Mexicali area. To date, the City of Mexicali has installed 50 PurpleAir sensors and has used this data for education and awareness, as well as to build a school flag program in Mexicali. These efforts have led to increased education and awareness provided to the public about air quality in their region and the precautions they should take to protect themselves when air quality levels are unhealthy. Due to the harsh temperatures, the failing of sensors (due to power issues and general wear and tear) in Mexicali, CARB has been supplying the City with replacement sensors on an as-needed basis. CARB will not be able to continue providing replacement sensors and it is important to maintain the current network in Mexicali. Grant 105 funding could be used to provide these replacement sensors to the City of Mexicali. Approximate cost for replacements is based on the assumption that ~20 sensors will need to be replaced every year.	\$5,000
Assist the City of Mexicali develop a Purple Air correction factor for the region/season (MLD)	Mexico has passed a regulation that all networks including sensor networks must issue an AQI to the community. The City of Mexicali, in cooperation with Baja SPA, plans to issue AQI alerts to the local residents using data from their 50 sensor Purple Air Network. CARB has agreed to assist the City of Mexicali develop a correction factor for their sensor network by co-locating several Purple Air sensors next to a regulatory PM monitor. Data will be collected for up to a year in order to capture the different seasons. The data will be used to develop a correction factor for the network. Funding is for colocation of multiple sensors and staff time to process data over a period of approximately 1 year.	\$10,000
Assist the City of Tijuana set up a 50 sensor network (MLD/AQPSD)	The City of Tijuana has formally requested support from CARB (<i>letter attached</i>) to develop a low cost sensor network for education and awareness, as well as to build a school flag program similar to what has been accomplished in the City of Mexicali. CARB plans to support the City of Tijuana with a long term loan 50 low cost sensors and training for deployment of the sensors. The sensor network will lead to increased education and awareness to the public about air quality in their region and the precautions they should take to protect themselves when air quality levels are unhealthy. Funding will be used for the purchase of the sensors as well as CARB travel and time for training the City of Tijuana.	\$18,000
Imperial County/Mexicali PM and ozone air alert and forecast mobile app and website (AQPSD)	Funding will continue the www.imperialvalleyair.org website that displays PM and ozone air quality for Imperial County and Mexicali. Daily air quality alerts and forecasts are available via email and mobile application when subscribers sign up. Monthly and annual air quality reports are provided as well. Various upgrades could be made to the website to improve visibility and functionality for the public. Those upgrades are listed below with the associated additional cost. <ul style="list-style-type: none"> - Website: layout and graphics updates (\$15-30k) <ul style="list-style-type: none"> o Coordinate with ARB and Imperial Valley staff on re-design elements 	\$100,000- \$162,000

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	<ul style="list-style-type: none"> o Re-style and modernize the look and feel of imperialvalleyair.org to improve the user experience o Improve layout and data displays, including the interactive map, data tables, and time series charts o Example of updated website: www.sparetheair.com - Website: addition of monthly and annual reports (\$6-7k) <ul style="list-style-type: none"> o Coordinate with ARB and Imperial Valley staff on layout, navigation, etc. o Make at least the last one year of archived monthly and annual reports on a new tab on website. o Forecast tools for Mexicali, possibly including - Data analysis and case studies of high-PM2.5 events in Mexicali (\$5k) <ul style="list-style-type: none"> o Development and implementation of AQCast or AQRules ozone and PM2.5 forecast tools for Mexicali. o Rules have previously been developed for Imperial Valley, but not Mexicali. o Tools will be customized based on air quality observations and surface and upper-air weather observations in Mexicali. o Tool development depends on the availability of observational data. 	
Salton Sea Community and Researchers Task Force (RD)	A taskforce support plan will be developed and implemented to respond to the urgent health crisis by promoting collaboration and facilitation of health and exposure research in Salton Sea communities over a three year time frame. The Taskforce support plan will consist of methods to support and augment existing environmental Taskforces in the community, to encompass this topic. The support plan will facilitate and guide the convening of university and college investigators, members of state and local agencies, non-profit organizations as well as community members. An organizational committee to include CARB staff and community members will help draft and implement the plan and facilitate its integration into existing taskforce frameworks. Two taskforce meetings focused on this topic will be planned the first year and two additional meetings will be planned for years two and three. At the meetings individual researchers and groups will present studies that are planned or ongoing in the Salton Sea area on health and exposure and task force participants will discuss gaps in research, strategies for better coordination of research efforts and emerging needs and research directions. A report will be produced from the results of these meetings and distributed to further raise awareness of the issues of concern and to promote research collaborations.	\$150,000
Deployment of CARB's Portable Emissions Acquisition System (PEAQs) for conducting roadside screening of heavy-duty vehicles operating in California near the US-Mexico border to assess compliance with adopted emissions regulations and provide emissions and vehicle inventory characterization (ED)	<p>Heavy-duty (HD) vehicles are a significant source of emissions that contribute to many health problems. Since 2000, CARB has adopted and implemented multiple regulations to reduce emissions from HD vehicles. Numerous studies have shown that a small percentage of HD vehicles are responsible for more than 50 percent of total HD emissions. With over half a million HD diesel trucks operating on the road each day in California, it is important to identify the high-emitting vehicles efficiently and allocate resources to assess compliance with adopted regulations.</p> <p>CARB is continuing to expand its ability to conduct roadside screening of HD diesel vehicles operating in California to assess compliance with adopted emissions regulations. PEAQS is a roadside measurement system used to capture HD vehicle emissions and license plate information. PEAQS determines an emissions snapshot for each passing vehicle in real-time and pairs that information with searchable license plate data collected by cameras and analyzed by automatic license plate reader (ALPR) software. For more information on this technology, please see the PEAQS summary video at: [HYPERLINK "https://www.youtube.com/watch?v=5kdsRR7_VVE"] (<i>copy and paste into browser</i>)</p> <p>In 2017, there were approximately 8.6 million vehicles crossing the Calexico border, of which 360,000 were HD trucks. Unfortunately, there is limited information available regarding the characteristics of these vehicles such as their age, or model year. If these trucks are operating non-compliant, their emissions can significantly contribute to emissions of criteria pollutants and toxics in communities</p>	\$150,000

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	<p>near the border, and adversely impact the public health. It is vital that we identify these vehicles so that we can assess compliance and create an accurate mobile source emissions inventory in order to develop effective strategies to reduce emissions from these sources. To accomplish this, CARB plans on deploying the PEAQS system coupled with cameras and ALPR software to develop an inventory of HD trucks combined with emissions that cross California's borders. The cameras and ALPR software will allow CARB to develop an accurate estimate of how many trucks pass through the border, as well as, vehicle owner information, their age, and model year. When coupled with the PEAQS system, CARB can also ascertain vehicle emissions information, including greenhouse gases and criteria pollutants, for each vehicle. Data collected using this technology will significantly help CARB screen for high-emitting vehicles and detect issues with regulatory compliance with the additional benefit of providing vehicle inventory characterization.</p> <p>The requested funding will be used to build, deploy and maintain 2-3 PEAQS units, which are coupled with cameras and ALPR software. These units will be deployed at multiple locations near the US-Mexico border to collect HD vehicle emissions data and monitor fleet characteristics. To build, deploy and ensure consistent operation of each system, as detailed above, will cost approximately \$50,000-75,000 per system.</p> <p>Time period: Acquire parts for the system in summer 2020, assembly through fall 2020 and deployment in early 2021. Initial deployment would be periodic, with the goal of continuous operation, upon cooperation with local, state and federal partners.</p>	
Border Area School Filtration Intervention Project (RD)	<p>Elevated asthma prevalence rates for children 0-17 have been found in the Calexico and El Centro border region. Contributing factors for these high rates of asthma are high levels of PM2.5 from a variety of sources in Mexico, truck traffic as well as wildfire smoke. In response to these health challenges, the Imperial County Air District has approved the use of CARB AB617 community air grant funds for an intervention program to install high efficiency air filtration in selected schools in the "El Centro-Heber-Calexico Corridor" border region. The main goal of the program is to reduce the PM burden on students while they are attending school. However, the current funding level would cover less than one-third of the approximate 40 public schools in this region. Clean air act 105 funds are being requested to increase the number of schools that could participate in the filtration program and also to expand the program to include monitoring of indoor PM levels in the classrooms before and after air filtration upgrades have been completed. A study will also be conducted to measure the effectiveness of the intervention both in reduction in indoor PM exposure as well as possible health impacts such as reduced school absences or asthma rates over a five year period.</p>	<p>\$170,000 per school included in the filtration intervention program</p> <p>\$50,000 to study program effectiveness</p>
Border Emissions Research (RD)	<p>This proposal would fund 5 years of dispersion modeling and monitoring of particulate matter and toxics to better understand how emissions from Mexico impact communities on the US side of the US-Mexico border. This modeling and monitoring would build on work included in a recently completed research contract with San Diego State University and Molina Center for Energy and the Environment. One element of the contract included one year of dispersion modeling. The results for the one year indicated that large areas of the San Diego and Imperial Counties receive pollution from Mexico. Modeling and expanded monitoring for up to five years including El Nino and La Nina years will help us to understand the frequency and extent of pollution episodes coming from Mexico. Expanded monitoring would be conducted in border communities in the U.S. and possibly in Mexico. The work would be in coordination with MLD and AQPSD.</p>	<p>\$300,000</p>
Validation of US/Mexico border region emissions inventories through airborne flux measurements (AQPSD)	<p>In summer 2021, the California Air Resources Board will be funding a large scale airborne flux campaign (NOx and speciated VOCs) in the Los Angeles air basin to validate the gridded emissions inventory used in attainment demonstration photochemical modeling, which determines the future emission targets needed to attain the ozone and PM2.5 NAAQS. Validating the modeling inventory is critical to increasing our confidence in these future emission targets, as well as improving the reliability of using modeling in "but for" SIPs, to assess the impact of local emissions vs. cross border emissions, and in health effects/exposure studies. Expanding the</p>	<p>\$500,000</p>

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	existing airborne flux campaign over Los Angeles to cover the border region, provides a rare opportunity to conduct a comprehensive evaluation of the border region emissions inventory at fraction of the cost of an independent study. Expanding the existing campaign would cost roughly \$500,000 as opposed to \$1 million for an independent border region campaign.	